THE JOURNAL OF GENERAL MICROBIOLOGY

EDITED FOR
THE SOCIETY FOR GENERAL MICROBIOLOGY
AND THE FEDERATION OF EUROPEAN
MICROBIOLOGICAL SOCIETIES

Editors

E. A. DAWES
J. P. ARBUTHNOTT C. A. FEWSON C. RATLEDGE
D. A. SMITH D. G. SMITH

Editorial Board

C. ADLAM
C. ANAGNOSTOPOULOS
S. A. ARCHER
J. E. BERINGER
H. G. BOMAN
I. J. BOUSFIELD
I. D. J. BURDETT
R. CAMPBELL
J. A. COLE
J. G. COOTE
D. J. COVE
P. DRAPER
J. W. DROZD
C. S. F. EASMON
K. ESSER
J. H. FREER
R. B. GILLILAND
M. GOODFELLOW
K. GULL
D. E. F. HARRISON
M. HERDMAN
I. B. HOLLAND
W. H. HOLMS
M. C. JONES-MORTIMER
R. F. O. KEMP
A. KOTYK
R. W. LACEY
P. J. LARGE
TH. LEISINGER
J. M. LYNCH
P. H. MÄKELÄ
M. J. MERRICK
B. E. B. MOSELEY
B. MÜLLER-HILL
W. C. NOBLE
J. R. NORRIS
A. PASZEWSKI
H. R. PERKINS
K. RING
R. J. ROWBURY
J. H. SLATER
A. E. R. TAYLOR
H. TRISTRAM
H. VELDKAMP
J. G. H. WESSELS
S. T. WILLIAMS
G. M. WILLIAMSON
D. A. WOOD
K. S. ZINNEMANN

VOLUME 117, 1980

CAMBRIDGE UNIVERSITY PRESS
CAMBRIDGE
LONDON NEW YORK NEW ROCHELLE
MELBOURNE SYDNEY

Published by the Press Syndicate of the University of Cambridge
The Pitt Building, Trumpington Street, Cambridge CB2 1RP
32 East 57th Street, New York, NY 10022, USA

© Society for General Microbiology 1980

Printed in Great Britain at the University Press, Cambridge

Contents

Part 1 *issued* March 1980

PAGE

Biosynthesis of the Core Part of the Lipopolysaccharide of *Pseudomonas aeruginosa*. By T. M. ASONGANYI and P. M. MEADOW 1

Properties of a New Group of Alkalophilic Bacteria. By J. M. GEE, B. M. LUND, G. METCALF and J. L. PEEL 9

Isoenzymes in Two Species of *Acholeplasma*. By S. M. LANHAM, R. M. LEMCKE, C. M. SCOTT and J. M. GRENDON 19

Complementation *in vitro* Between *guaB* Mutants of *Escherichia coli* K12. By H. J. GILBERT and W. T. DRABBLE 33

Simplified Vegetative Cell Cycle of *Rhodomicrobium vannielii*. By C. S. DOW and A. D. FRANCE 47

Biochemical Effects on Germ-free Mice of Association with Several Strains of Anaerobic Bacteria. By G. W. WELLING, G. GROEN, J. H. M. TUINTE, J. P. KOOPMAN and H. M. KENNIS 57

The Effect of Purified Lipopolysaccharide on the Bactericidal Reaction of Human Serum Complement. By R. J. ALLEN and G. K. SCOTT 65

The Effect of Growth Conditions on Cyanogenesis by *Chromobacterium violaceum*. By P. A. COLLINS, P. B. RODGERS and C. J. KNOWLES 73

Regulation of Phenylalanine and Tyrosine Biosynthesis in *Pseudomonas aureofaciens* ATCC 15926. By E. BLUMENSTOCK, O. SALCHER and F. LINGENS . . . 81

Utilization of Methyl Amines as Nitrogen Sources by Non-methylotrophs. By B. BICKNELL and J. D. OWENS 89

Chemical Studies on Some Bacteria which Utilize Gaseous Unsaturated Hydrocarbons. By J. A. M. de BONT, S. B. PRIMROSE, M. D. COLLINS and D. JONES . . . 97

Polygenes and Modifier Genes for Tetracycline and Penicillin Resistance in *Neisseria gonorrhoeae*. By P. F. WARNER, L. J. ZUBRZYCKI and M. CHILA . . . 103

The Effect of Temperature on the Formation of Sheathed Flagella by *Pseudomonas stizolobii*. By J. A. FUERST and A. C. HAYWARD 111

Dual Binding Sites for Peanut Lectin on Rhizobia. By A. A. BHAGWAT and J. THOMAS 119

The Effect of Methyl Glyoxal on Cell Division and the Synthesis of Protein and DNA in Synchronous and Asynchronous Cultures of *Escherichia coli* B/r. By H. N. A FRAVAL and D. C. H. MCBRIEN 127

Adenine+Thymine Content of Different Genes Located on the Broad Host Range Plasmid RP4. By H.-J. BURKARDT, A. PÜHLER and W. WOHLLEBEN . . 135

Serological and Chemical Interrelationship of Antigens from *Leptospira interrogans* serovar *canicola*. By A. PALIT and P. M. HARRISON 141

PAGE

Lipid Composition of *Paracoccidioides brasiliensis*: Possible Correlation with Virulence of Different Strains. By M. S. MANOCHA, G. SAN-BLAS and S. CENTENO 147

Isolation and Properties of a New Hydrogen Bacterium Related to *Pseudomonas saccharophila*. By N. J. PALLERONI 155

Regulation of Bacitracin Synthetase by Divalent Metal Ions in *Bacillus licheniformis*. By Ø. FRØYSHOV, A. MATHIESEN and H. I. HAAVIK 163

Regulation of Nitrogenase Biosynthesis in *Klebsiella pneumoniae*: Effect of Nitrate. By S. S. M. HOM, H. HENNECKE and K. T. SHANMUGAM 169

Localization of Cellulase Components in *Pseudomonas* sp. Isolated from Activated Sludge. By K. RAMASAMY and H. VERACHTERT 181

A Polygalacturonate Lyase Produced by *Lachnospira multiparus* Isolated from the Bovine Rumen. By M. WOJCIECHOWICZ, K. HEINRICHOVA and A. ZIOŁECKI . 193

Phenotypic and Genotypic Characterization of Some Thermophilic Species of *Bacillus*. By R. J. SHARP, K. J. BOWN and A. ATKINSON 201

Purification of Four Penicillin-binding Proteins from *Bacillus megaterium*. By H. A. CHASE 211

Fatty-acyl Composition of the Lipids of *Saccharomyces cerevisiae* Grown Aerobically or Anaerobically in Media Containing Different Fatty Acids. By K. WATSON and A. H. ROSE 225

Extracellular Cellulase Production by *Sporocytophaga myxococcoides* NCIB 8639. By I. VANCE, C. M. TOPHAM, S. L. BLAYDEN and J. TAMPION 235

SHORT COMMUNICATIONS

Transposition of Tn951 (Tn*lac*) and Cointegrate Formation are Thermosensitive Processes. By G. CORNELIS 243

Disappearance of Nystatin Resistance in *Candida* Mediated by Ergosterol. By J. MAS and E. PIÑA 249

Inhibition of Sterol Biosynthesis in *Candida albicans* by Imidazole-containing Antifungals. By M. S. MARRIOTT 253

A Mutant Defective in Electron Transfer to Nitrate in *Escherichia coli* K12. By V. ORTH, M. CHIPPAUX and M.-C. PASCAL 257

Gradient Elution from a DEAE-cellulose Column of Capsulate and Non-Capsulate Strains of *Klebsiella aerogenes*. By A. N. HALL and S. S. A. JAFRI 263

A Screening Method for the Estimation of Filter Paper Activity. By F. WABNEGG, K. MESSNER and M. RÖHR 267

Intracellular Distribution of Carbon Dioxide-fixing Enzymes in *Trypanosoma cruzi* and *Crithidia fasciculata*. By J. J. CAZZULO, E. VALLE, R. DOCAMPO and J. J. B. CANNATA 271

PAGE

Isolation of a Non-adhesive Mutant of *Vibrio cholerae* and Chromosomal Localization of the Gene Controlling Mannose-sensitive Adherence. By R. SRIVASTAVA and B. S. SRIVASTAVA 275

Localization of Cholinesterase in *Pseudomonas aeruginosa* Strain K. By N. GARBER and I. NACHSHON 279

Part 2 *issued* April 1980

Some Differences in the Microbiology of Profundal and Littoral Lake Sediments. By J. G. JONES 285

N-Methylglutamate Dehydrogenase, a Flavohaemoprotein Purified from a New Pink Trimethylamine-utilizing Bacterium. By C. A. BOULTON, G. W. HAYWOOD and P. J. LARGE 293

Partial Purification and Characterization of a Dye-linked Formaldehyde Dehydrogenase from *Hyphomicrobium* X. By I. W. MARISON and M. M. ATTWOOD . 305

The Mitochondrial Cytochromes of an Unusual Budding Yeast, *Sterigmatomyces halophilus*: Spectral Characterization Exploiting Fourth-order Finite Difference Analysis. By I. SALMON and R. K. POOLE 315

Production, Purification and Properties of Extracellular Laccase of *Agaricus bisporus*. By D. A. WOOD 327

Inactivation of Extracellular Laccase During Fruiting of *Agaricus bisporus*. By D. A. WOOD 339

Characterization of Bacteriophage SPP1 Transducing Particles. By H. DE LENCASTRE and L. J. ARCHER 347

Regulation of Cellular Metabolism During Synthesis and Expression of the Luminous System in *Beneckea* and *Photobacterium*. By D. M. KARL and K. H. NEALSON 357

Amino-sugar Transport Systems of *Escherichia coli* K12. By M. C. JONES-MORTIMER and H. L. KORNBERG 369

Two Genes Affecting Glucarate Utilization in *Escherichia coli* K12. By A. M. ROBERTON, P. A. SULLIVAN, M. C. JONES-MORTIMER and H. L. KORNBERG . 377

Reduction of Amphotericin Resistance in Stationary Phase Cultures of *Candida albicans* by Treatment with Enzymes. By E. F. GALE, J. INGRAM, D. KERRIDGE, V. NOTARIO and F. WAYMAN 383

Distribution and Abundance of Bacteria in the Gut of a Soil-feeding Termite *Procubitermes aburiensis* (Termitidae, Termitinae). By D. E. BIGNELL, H. OSKARSSON and J. M. ANDERSON 393

Production of Verruculogen by *Penicillium estinogenum* in Stirred Fermenters. By J. B. DAY, P. G. MANTLE and B. I. SHAW 405

The Uptake and Metabolism of Bacteria, Amino Acids, Glucose and Starch by the Spined and Spineless Forms of the Rumen Ciliate *Entodinium caudatum*. By G. S. COLEMAN and D. C. SANDFORD 411

PAGE

Isolation and Characterization of a Mutant of *Escherichia coli* K12 Synthesizing DNA Polymerase I and Endonuclease I Constitutively. By S. I. AHMAD, A. ATKINSON and A. EISENSTARK 419

Asparaginase II of *Saccharomyces cerevisiae*: Dynamics of Accumulation and Loss in Rapidly Growing Cells. By K. D. PAULING and G. E. JONES 423

Conjugational Gene Transfer in *Xanthobacter autotrophicus* GZ29. By D. WILKE . 431

Preparation and Quantitative Determination of Antibodies Against Major Outer Membrane Proteins of *Escherichia coli* O26 K60. By H. HOFSTRA and J. DANKERT 437

Ribosomal RNA Genes in *Kluyveromyces marxianus*. By M. OJHA 449

Variant Pili Produced by Mutants of the F*lac* Plasmid. By N. S. WILLETTS, P. M. MOORE and W. PARANCHYCH 455

Metabolism During Asexual Sporulation in *Rhizopus arrhizus* (Fischer). By G. C. LAWLER and D. J. WEBER 465

Formation of the Dehydrogenases for Lactate, Ethanol and Butanediol in the Strictly Aerobic Bacterium *Alcaligenes eutrophus*. By H. G. SCHLEGEL and D. VOLLBRECHT 475

Distinctive Electrophoretic Patterns of Esterases from *Klebsiella pneumoniae*, *K. oxytoca*, *Enterobacter aerogenes* and *E. gergoviae*. By PH. GOULLET . . . 483

Esterase Electrophoretic Pattern Relatedness Between *Shigella* Species and *Escherichia coli*. By PH. GOULLET 493

The Genome of *Rhodomicrobium vannielii*, a Polymorphic Prosthecate Bacterium. By L. E. POTTS, C. S. DOW and R. J. AVERY 501

The Use of Translocatable Genetic Elements to Construct a Fine-structure Map of the *Klebsiella pneumoniae* Nitrogen Fixation (*nif*) Gene Cluster. By M. MERRICK, M. FILSER, R. DIXON, C. ELMERICH, L. SIBOLD and J. HOUMARD . . . 509

Regulation of the Plasmid-specified Naphthalene Catabolic Pathway of *Pseudomonas putida*. By R. A. AUSTEN and N. W. DUNN 521

SHORT COMMUNICATIONS

Evidence for the Existence of Two Catabolic Plasmids Coding for the Degradation of Naphthalene. By N. W. DUNN, H. M. DUNN and R. A. AUSTEN . . 529

Phenotypic Resistance to Miconazole and Amphotericin B in *Candida albicans*. By E. F. GALE, A. M. JOHNSON, D. KERRIDGE and F. WAYMAN 535

Role of L-Threonine Deaminase and L-Threonine 3-Dehydrogenase in the Utilization of L-Threonine by *Pseudomonas aeruginosa*. By V. M. S. LAM, I. P. R. CHAN and Y. G. YEUNG 539

Selective Inactivation of Nitrogenase and Glutamate Synthase during Sporulation of *Clostridium pasteurianum*. By F. VALLESPINÓS and D. KLEINER . . . 543

Properties of a Filamentous Phage which Adsorbs to Pili Coded by Plasmids of the IncI Complex. By J. N. COETZEE, F. A. SIRGEL and G. LECATSAS . . . 547